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GRAINS RECOMMENDED FOR TRIAL

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For several years the University of California Experiment Station has had under trial a large number of varieties of wheat, oats, and barley. As a result of these tests, a limited amount of the seed from several of the more promising varieties are offered for wider trial the present season. The varieties on hand which are recommended for trial by growers are listed below, together with a brief description of each of the types and the performance record of each on the cereal stations of the University. All of the wheats have been grown in competition with White Australian, which was the variety used upon the check plats. The oats have been tried against the Texas Red, and the barleys against the common six-row type.

These new grains have not as yet all been pedigreed, but they are considered worthy of dissemination in their present condition.

The price of the grains, f. o. b. Davis, Cal., will be three (3) cents per pound in 100-pound lots; five cents per pound for less than 100-pound lots. No more than 100 pounds will be sold to one party. Applications for these grains should be addressed to G. W. Shaw, University Agricultural Experiment Station, Berkeley, Cal.

WHEATS

Bobs (Cal. No. 779).—Bobs wheat is a tall, erect, beardless, compact growing variety. The foliage is erect, dark green in color, but not very abundant. The straw, when ripe, is white, as is also the smooth chaff. It makes a good winter growth under California conditions and stands up well, although the straw is only medium stout, and matures medium early. The grain is small, plump, pearly, and very heavy. It belongs to the strong white class and carries an unusually good gluten content for a white wheat, making it admirably adapted for blending in the manufacture of flour.

Bobs is a distinct hybrid, resulting from a crossing of Blount's Lambrigg wheat with the bald and beardless (Nepaul) barley. The variety was developed in New South Wales, 1898, and immediately took high rank as a distinct improvement in the white milling wheats.

In New South Wales reports give the milling characteristics of this wheat as follows: "It is a splendid milling wheat, giving a good

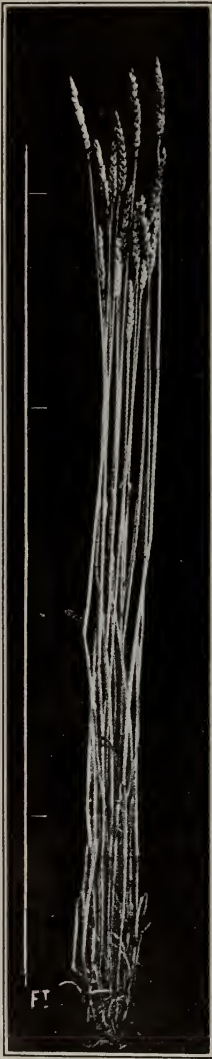


Fig. 1. Bobs Wheat.



Fig. 2. Bobs Wheat,
full size.

proportion of strong flour, quite as strong as the Fife wheats, which it resembles very strongly in its behavior in the mill, and if properly conditioned yields its flour readily and in good quantity; produces a straight grade flour, of high baking quality, being of high color, good gluten content, and very strong." . . . "but the loaves were not quite as large. Further evidence in this direction is afforded by the fact that for several years past it has been placed as the Champion Milling Wheat of New South Wales at the Royal Agricultural Show, Sydney."

At the University Farm at Davis this wheat has not been under as favorable trial conditions as most of the varieties on account of its unfortunate location in the field, still it has made a very favorable showing since it has become acclimated, and has been improving each year. The average yield since 1908, inclusive, has been 35.3 bushels per acre.

This wheat should make a distinctly valuable addition to the milling wheats of California. It is said to produce a hay of which stock is very fond and a tender straw that is also well relished. It is certainly an excellent general purpose variety.

Fretes (Cal. No. 799).—*Fretes* wheat is a free-stooling, prolific, semi-erect, vigorous, early, bearded wheat that may be seeded medium late. It grows to a height of three to four and one-half feet and stools fairly freely. It has a white chaff which does not enclose the grain very tenaciously, although it compares favorably with White Australian in this respect. The kernels are of medium size and length and of a light red color.

A mill test of this wheat was made by the Oakland Milling Company, Oakdale, California, which indicated that this variety was of a free-milling character, and that the flour from the sample milled possessed a 40 per cent wet gluten content against 38 per cent for the White Australian milled at the same time and grown under the same conditions.

The seed originally came from Algeria, and it is particularly noted for its early maturity. It is often planted in Sahara when winter rains occur so late that the durum varieties would not have time to mature. The original seed was grown on the rather salty desert sands and was watered with saline, although drinkable, water.

It has been under trial upon the University Station since 1902. The observations made as to its adaptability to California conditions indicate that it is a heavier yielding variety than White Australian and is of fair milling quality.

The average yield of Fretes, as compared with White Australian, 1908 to 1910, inclusive, under the same conditions on the University Station, is as follows:

	Stanislaus County	Yolo County	Tulare County
Fretes	46.5	45.1	43.4
White Australian	39.5	35.5	33.3



Fig. 3. Fretes Wheat,
three-fourths size.



Fig. 4. Early Baart,
three-fourths size.

Early Baart (Cal. No. 113).—This is a bearded, white-chaffed wheat, which has a field appearance much resembling Fretes. It is an upright, vigorous, winter grower, which stools well and matures early. It differs from Fretes in possessing a white berry, which is

usually of good quality and bushel weight. It matures a few days earlier than White Australian. It has proven to be well adapted to the light soils of the San Joaquin Valley, and on the heavier soils of the Sacramento Valley is among the best of the white wheat class. It has usually produced about 10 per cent more than White Australian. Its performance record has been as follows:

	Bushels per acre
Stanislaus County	26.9
Yolo County	45.8
Tulare County	47.0



Fig. 5. King's Early,
three-fourths size.



Fig. 6. Galgalos,
three-fourths size.

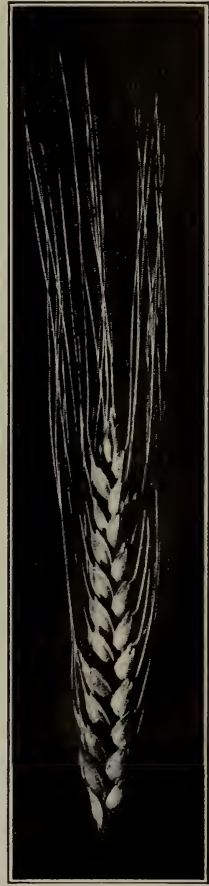


Fig. 7. Kubanka,
three-fourths size.

King's Early (Cal. No. 592).—This wheat in many respects resembles the Early Baart, but matures about a week earlier than either Baart or White Australian. It is a bearded type with a white berry of fair quality and good weight. It has a slight tendency to smut and consequently the seed should always be treated with bluestone or formaldehyde before seeding. This type has usually exceeded White Australian in yield and equalled it in quality.

	Yolo County	Tulare County
King's Early	41.67	35.7
White Australian	35.01	33.21

Galgalos (Cal. No. 631).—Galgalos is of a semi-spreading growth, and its early growth is only medium fast. It possesses a light red chaff which holds the berry well, and is essentially beardless. The kernels are generally white, occasionally with a distinctly reddish tinge, large, heavy, and well formed, and harder than those of White Australian and Bluestem. It is a type that should be seeded early to secure the best results. It has been under plat trial since 1907, and has yielded well when under favorable conditions.

	PERFORMANCE RECORD	Bushels per acre
Stanislaus County		32.3
Yolo County		34.3
Tulare County		32.6

Chul Wheat.—This wheat was first brought to this country by Mr. E. A. Bessey for the office of Seed and Plant Introduction in 1902. Of this variety the following notes were made by Mr. Bessey:

“Chul is grown on the steppes of Russia without irrigation. The grains are hard, but it is not durum wheat. This variety yields two harvests a year, for it can be sown as either a winter or spring wheat.”

The Station distributed its first seed of this variety to farmers in October, 1903.

As a result of the experiments conducted upon the University Farm and at other stations, the University is now ready to recommend the wide planting of Chul (California No. 598) wheat, especially in place of Club and Chili wheats in the Sacramento Valley. After a number of years' trial, both on the experimental grounds controlled by the University and in co-operation with many farmers, this wheat has been found to meet the extreme conditions of the Sacramento Valley exceedingly well, besides being of milling quality much superior to Club, but not to White Australian. While the wheat is of the

bearded type, yet it differs much from the other bearded wheats which California farmers have tried.

Chul wheat is an early, erect, and vigorous variety which grows to a height of three to four feet. The wheat stools well and produces heads which are medium long, tapering, and bearded. In appearance, the growing wheat plant much resembles the well known Propo, but the berry is of a much different character, being darker and larger, as well as harder. One particularly desirable feature is its non-shattering character. It will stand the heavy winds of the Sacramento Valley with scarcely any loss from shattering. The kernels are large, long, and tapering, and of a translucent character. The kernels are much harder and heavier than White Australian. They resemble the kernels from the durum wheats, although *the wheat is not a durum*. The variety is one that has a long seeding period and *it can be planted as late as the middle of February and still make a good crop*. As originally introduced it carried two types of heads and two types of kernels. One type possessed a white chaff, and the other a reddish brown chaff. The one type of kernel was light amber in color, and the other areddish amber. Both of these types are still to be found in the commercial plantings of the last few years. *There is practically no Chul of a single pure type upon the market*. The Station has now separated two types, but has not a sufficient quantity of perfectly uniform type to offer at this time. In its ability to withstand drought it is a strong rival of the durum wheats. For instance, on one of the experiment stations of the University of California in 1908 it yielded at the rate of 63.3 bushels per acre and received less than eight inches of rainfall and was not irrigated. On another station the yield was at the rate of 63½ bushels per acre, with only ten inches of rain, and on still another station, at the rate of 51 bushels per acre.

Performance.—Chul wheat has made an exceptionally good showing in the field tests both on the stations and in the field trials of farmers.

It has been tried not only by the University of California, but also on a large scale by a considerable number of farmers in the vicinity of Williams, Arbuckle, and Maxwell during the past three seasons, under rather adverse conditions, and has given uniformly good results, although it had no rain after March 1st. In that section some 5000 acres of this wheat was grown in 1911.

The numerous farmers who have grown this wheat quite generally report an increased yield of from two to four sacks per acre over the common types.

The Milling Quality.—While the average gluten (protein) content of Chul is about 1 per cent higher than the wheats commonly grown in California, as shown by the following, yet the millers offer some objection to it because of its hardness and the fact that the volume of loaf obtained from the flour is slightly less than some other wheats. But to offset this, its yield of flour is somewhat greater and the absorptive capacity of the flour is higher.

The milling character of Chul will differ with individual lots according to its condition of culture, mainly time of seeding and the time at which it receives moisture. This is true of all varieties of wheat, and Chul is no exception in this case. Each lot should be judged upon its own merits as should all other wheats.

As there are numerous requests for this type it may be said that while there is no supply of the uniform type to be had, *yet the writer will be glad to assist farmers to secure a good quality of the seed of the commercial grain.*

DURUM WHEATS

Kubanka (Cal. No. 743).—This is one of the best types of the durum (or macaroni) class. It is a tall, upright growing wheat, with broad, smooth leaves, but rather coarse and not adapted for hay. The heads are large, well formed, and very heavily bearded, being much more so than the ordinary wheats, giving it much the outward appearance of barley. All this class of wheats stool rather lightly and require heavy seeding. The kernel is relatively large, of light amber color when normal, and very uniform. The grain is tightly held in the chaff and resists shattering. It matures early and is quite resistant to both rust and smut. On account of the fact that this wheat has been used mostly in a special experiment, it has not been given as favorable a test as the other types.

The habits of growing of this and other types of the durum wheats adapt them to regions of very light rainfall, but they require heat and a rich soil, although they are notably resistant to alkali. They are generally regarded as spring wheats, but in California, except at the high altitudes, they should be seeded in the winter or very early spring.

The performance record of this variety is as follows:

	Bushels per acre
Stanislaus County	26.6
Tulare County	37.4
Yolo County	40.5

Marouani (Cal. No. 639).—*Marouani* is an excellent grain of the durum or macaroni type, originally imported from Algeria. It is regarded as one of the best durum wheats known. In its general characteristics it is quite similar to *Kubanka*, although a somewhat more vigorous grower. It is heavily bearded, has a close chaff, does not easily shatter, resists drought, rust, and smut well, and can be seeded relatively late and still make a crop. The kernels are large, amber when normal, hard and very heavy. The grain is especially adapted to the making of semolina, and it should be well suited for the manufacture of breakfast foods. *Marouani* has been a consistent



Fig. 8. *Marouani*,
one-half size.

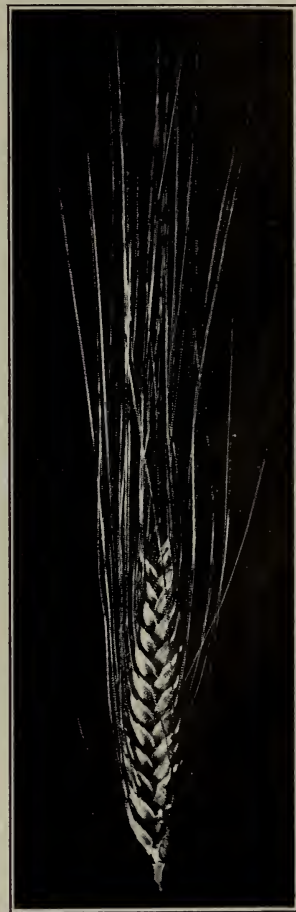


Fig. 9. *Velvet Don*,
three-eighths size.

high yielding variety. The average performance record on the California stations has been as follows:

	Bushels per acre
Stanislaus County	39.9
*Yolo County	49.1

Velvet Don (Cal. No. 684).—This is a heavily bearded variety of the durum type. It is a very vigorous grower which withstands drought, rust, and smut excellently. It does not stool heavily and requires rather heavy seeding. It does not easily shatter and in most respects is much like Kubanka, but the spikelets are not quite as closely set. Its grains are handsome, large, amber, when normal, and heavy. Its yield has usually been very good, but not equal to that of Marouani.

PERFORMANCE RECORD

	Bushels per acre
Stanislaus County	23.5
Yolo County	44.2

BARLEYS

Beldi.—This is a six-row bearded barley with a bluish berry. The head is a little shorter than that of the common barley. The early growth of this type is about the same as the common sort, but in its ultimate growth it is not quite as tall. *Beldi* matures about two weeks earlier than the common barley, which is a feature very much to its advantage, particularly in lessening the loss from shattering and in enabling it to mature with a smaller water supply, as well as in enabling it to be harvested earlier when it is desired to follow the crop by some irrigated crop like corn, cotton, or cowpeas. The berry is of fair quality, but it is not particularly recommended for brewing purposes.

This type has been under trial since 1905. The seed originally came from Algeria, where it is grown on the saline soils of the Sahara Desert. It is grown there under irrigation, but the irrigation water itself is saline. Under those conditions it succeeds, while other plants fail. For these reasons it may be somewhat more alkali resistant than our common sort. It is regarded as a barley of great promise and can be highly recommended.

The average yield on the San Joaquin Valley Station for the past five years has been 64.4 bushels per acre, while common barley under similar conditions has yielded 49.6 bushels.

In the Sacramento Valley the average yield for 1908–11, inclusive, has been 51.5 bushels per acre.

The observations of one grower of considerable acreage in Riverside County may be summarized as follows: It matured two weeks earlier than common barley; the grain was full and plump, while the common was "shoe pegged." The yield of all barley was low, the average about seven sacks. On this land, Beldi exceeded the common barley by one sack to the acre on 400 acres. The precipitation was only 8 inches and the ground in poor condition. The land had been farmed annually to barley for five years. He states further: "I believe it is the proper seed for us to use when the rainfall is as low as 8 inches."

Another correspondent from near Paso Robles writes as follows: "We experimented with Beldi barley and believe it to be the most

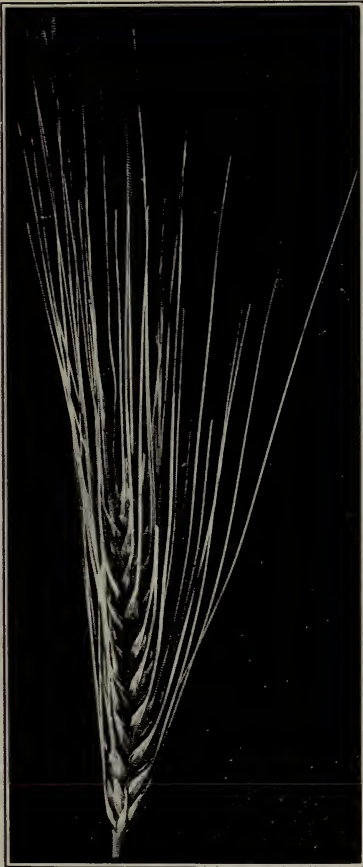


Fig. 10. Beldi Barley,
three-eighths size.



Fig. 11. Hannchen Barley,
full size.

profitable variety to raise in our section. We sowed 144 acres, one-half to Beldi barley and the other to very good seed barley (common) purchased in the Salinas Valley. The Beldi in this field averaged 14.4 sacks per acre against 9.36 sacks of the common. The Beldi tract is very much lighter in color and of heavier weight, 111 pounds per sack as against 105 of the ordinary barley.”

Hannchen.—This is a two-row barley. The plant is of rather peculiar habit, rather late in starting its growth, but nevertheless very heavily stooling and has comparatively few leaves, and these are near the ground. It possesses a rather stiff straw which stands up well, but



Fig. 12. Hannchen,
one-half size.



Fig. 13. Tennessee Winter
Barley.

the grain does not easily shatter. The beards are often shed. The kernels are relatively small; excellent in weight, form, and of light yellow color, very finely wrinkled and with thin skin. It ripens early, but is not as early as Beldi. It is particularly recommended for light, warm, and rich soils, and for high altitudes. It is of good brewing quality.

This is a pedigreed type, originally developed at the Swedish Seed Breeding Institute in Svalöf by Dr. Nilsson.

It has been under trial on the California Station since 1905, and has uniformly produced high yields.

The average yield on the San Joaquin Valley Station has been 54 bushels per acre against 49.6 bushels per acre for the common barley.

In the Sacramento Valley this type has averaged 54 bushels per acre against 50.4 for the common barley.

White Smyrna.—This barley is an early maturing sort of the two-row type. It has a relatively weak straw and is somewhat given to lodging when the growth is heavy. It matures about five days earlier than the common barley and in this respect resembles Hannchen. The grain is large, plump, well formed, very bright, and has a yellowish color, and is of good weight. It threshes practically free of beards. On account of the brittleness of the straw just below the head it is not as well adapted to regions where the atmosphere is very dry as the Hannchen variety. It is probable that this barley is well adapted to the coast sections.

This variety was secured in Smyrna, Asia Minor, by Mr. George C. Roeding, of Fresno, and has been grown systematically upon the California station since 1902 with very satisfactory yields. In the San Joaquin Valley the average yield has been 59.5 bushels per acre. At the University Farm, Davis, the average yield for four years has been 46.2 bushels per acre.

Tennessee Winter.—This belongs to the six-row class of barleys and is particularly adapted to early seeding. It should be seeded in December to secure the best results. In its early growth its foliage is of a light bluish-green color and somewhat spreading in character. It does not easily shatter and the berries are large, well formed, and of good weight.

It has only been tried in the Sacramento Valley and has usually been seeded too late to be under the most favorable conditions. It is adapted particularly to the northern part of the State, particularly

the higher altitudes. The average yield since 1907, at Davis, under rather unfavorable conditions, has been 57.7 bushels per acre.

Mansury.—This barley is of the six-row type, very uniform in its character of growth. The leaves are relatively broad, long, and thick; the straw is very thick, thus preventing lodging. In heavy winds it shatters badly. It is best adapted to regions of little wind during the ripening period. The grain is of bluish color, of medium size, and of excellent quality. It should be seeded early.



Fig. 14. Mansury,
three-eighths size.



Fig. 15. Burt Oat,
three-eighths size.



Fig. 16. Red Algerian,
three-eighths size.



Fig. 17. Sixty-day Oat,
three-eighths size.

OATS

Burt.—A variety with a medium small, slender, dark gray berry. It ripens about twelve days earlier than the common (Texas Red). It is the most rapid grower of any we have had under trial upon the experimental grounds. It can be seeded relatively late. This oat has averaged to yield, in the Sacramento Valley, about 20 per cent more than the common oat. This variety is highly recommended, especially for late seeding.

Red Algerian.—This type of oat is very similar to the common red oat grown in California, but has averaged to yield about 7 per cent more under the same condition. It is adapted to the region in which oats are commonly grown in the State.

Sixty Day.—The berries of this oat are small, slender, and very tapering, white in color and of fair bushel weight. It possesses a stiff straw and does not lodge easily. The color of the plant is somewhat darker than that of the Burt, but lighter than that of the common red oat. It is particularly adapted for early seeding and does not fill well if seeded late. Its average production is about 33 per cent more than the common oat under similar conditions and early seeding.